NAME OF WORK:- PACKAGE-9, (Includes 2 Works of Rs 200.00 lakhs) 1) IMPROVEMENTS TO ROADS AND DRAINS AT SINGAPURA, SINGAPURA GARDEN, VALMIKI NAGARA, ASHERAYA LAYOUT, KUVEMPUNAGARA & NAIDU LAYOUT IN WARD NO. 11 KUVEMPUNAGARA. 2) IMPROVEMENTS TO ROADS AND DRAINS AT TEACHERS LAYOUT, RAGHAVENDRA COLONY, BALAJI LAYOUT, SHRINIDHI LAYOUT, VAISNAVI LAYOUT, SAI GARDEN, M S PALYA, BHARATH NAGARA, CHINNASWAMY LAYOUT, MARUTHI LAYOUT, VINAYAKA NAGAR, SINGAPURA PARADISE, IN WARD NO. 11 KUVEMPUNAGARA.

# First and Final Bill

# Quality Control Reports

# QC ABSTRACT

**NAME OF WORK:** Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

| SL NO | Item Of Work | Name of Test | Frequency of Test/Quantity | Executed Quantity | Number of Tests Required | Number of Tests Conducted |
|---|---|---|---|---|---|---|
| | | **Materials** | | | | |
| 1 | GSB | SIEVE ANALYSIS | Three Test | | 3 | 3 |
| 2 | WMM | Sieve Analysis | Seven Test | | 7 | 7 |
| | | Impact Value | Two Test | | 2 | 2 |
| | | Flakiness Index | Three Test | | 3 | 3 |
| | | Elongation Index | One Test | | 1 | 1 |
| 3 | BC | SIEVE ANALYSIS | Three Test | | 3 | 3 |
| | | STRIPPING VALUE | One Test | | 1 | 1 |
| | | Flakiness Index | Three Test | | 3 | 3 |
| | | Elongation Index | Three Test | | 3 | 3 |
| | | IMPACT VALUE | Three Test | | 3 | 3 |
| | | Specific gravity | Three Test | | 3 | 3 |
| | | Water Absorption | Three Test | | 3 | 3 |
| | | Marshal Stability | One Test | | 1 | 1 |
| | | Marshal flow | One Test | | 1 | 1 |
| | | Percent air Voids | One Test | | 1 | 1 |
| | | Percent Voids in mineral | One Test | | 1 | 1 |
| | | Percent Voids filled with Bitumen | One Test | | 1 | 1 |
| | | Density | One Test | | 1 | 1 |
| | | Gradation | One Test | | 1 | 1 |
| 4 | BITUMEN | Ductility | One Test | | 1 | 1 |
| | | Softening Point | One Test | | 1 | 1 |
| | | Penetration | One Test | | 1 | 1 |
| | | Flash Point | One Test | | 1 | 1 |
| | | Fire Point | One Test | | 1 | 1 |
| 5 | TACK COAT | Rate of spread | Two Test | | 2 | 2 |

# TEST RESULTS OF GRADATION FOR GSB
## (IS 2386:(Part 1) 1963 (RA2011)

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 03-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 01-02-21

**Type of Mix** : GSB (Granular Sub Base)

**Date of test** : 01-02-21

**Oven Dry Weight** : 10000 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Cumulative Weight Retained (gm) | % Cumulative Weight Retained | % Passing | Spec. Limit Vide Table 400.1 MORTH Specification |
|---|---|---|---|---|---|
| 75 | 0 | 0 | 0 | 100 | 100 |
| 53 | 997 | 997 | 9.97 | 90.03 | 80-100 |
| 26.5 | 1685 | 2682 | 26.82 | 73.18 | 55-90 |
| 9.5 | 1292 | 3974 | 39.74 | 60.26 | 35-65 |
| 4.75 | 1490 | 5464 | 54.64 | 45.36 | 25-55 |
| 2.36 | 1764 | 7228 | 72.28 | 27.72 | 20-40 |
| 0.425 | 1666 | 8894 | 88.94 | 11.06 | 10-25 |
| 0.075 | 1106 | 10000 | 100.00 | 0.00 | 0-5 |

**TESTS ON FILLER SCREEN MATERIALS**

| Sl no | Particulars | Test results | Spec.Limit Vide Table |
|---|---|---|---|
| 1 | Liquid Limit, % | 21.05% | Maximum 25 |
| 2 | Plasticity index, % | Non plastic | Maximum 6 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signatory
Quality Manager


*End of Report*

# TEST RESULTS OF GRADATION FOR GSB
## (IS 2386:(Part 1) 1963 (RA2011)

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 04-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 02-02-21

**Type of Mix** : GSB (Granular Sub Base)

**Date of test** : 02-02-21

**Oven Dry Weight** : 10000 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Cumulative Weight Retained (gm) | % Cumulative Weight Retained | % Passing | Spec. Limit Vide Table 400.1 MORTH Specification |
|---|---|---|---|---|---|
| 75 | 0 | 0 | 0 | 100 | 100 |
| 53 | 995 | 995 | 9.95 | 90.05 | 80-100 |
| 26.5 | 1703 | 2698 | 26.98 | 73.02 | 55-90 |
| 9.5 | 1280 | 3978 | 39.78 | 60.22 | 35-65 |
| 4.75 | 1395 | 5373 | 53.73 | 46.27 | 25-55 |
| 2.36 | 1723 | 7096 | 70.96 | 29.04 | 20-40 |
| 0.425 | 1560 | 8656 | 86.56 | 13.44 | 10-25 |
| 0.075 | 1090 | 9746 | 97.46 | 2.54 | 0-5 |

**TESTS ON FILLER SCREEN MATERIALS**

| Sl no | Particulars | Test results | Spec.Limit Vide Table |
|---|---|---|---|
| 1 | Liquid Limit, % | 21.25% | Maximum 25 |
| 2 | Plasticity index, % | Non plastic | Maximum 6 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.
R KARTHIK RECHAN
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Quality Manager

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Vidyaranyapura Sub Division
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*End of Report*

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# TEST RESULTS OF GRADATION FOR WMM

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 08-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 06-02-21

**Type of Mix** : WMM ( Wet Mix Macadam)

**Date of test** : 06-02-21

**Oven Dry Weight** : 11000 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Cumulative Weight Retained (gm) | % Cumulative Weight Retained | % Passing | Spec.I.Vide Table 400.13 MORTH Specification |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0.0 | 100.0 | 100 |
| 45 | 315 | 315 | 2.9 | 97.1 | 95-100 |
| 22.4 | 2259 | 2574 | 23.4 | 76.6 | 60-80 |
| 11.2 | 2179 | 4753 | 43.2 | 56.8 | 40-60 |
| 4.75 | 2251 | 7004 | 63.7 | 36.3 | 25-40 |
| 2.36 | 1621 | 8625 | 78.4 | 21.6 | 15-30 |
| 0.6 | 623 | 9248 | 84.1 | 15.9 | 8-22 |
| 0.075 | 1338 | 10586 | 96.2 | 3.8 | 0-5 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.

R KARTHIK RECHAN
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# TEST RESULTS OF GRADATION FOR WMM

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 10-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 08-02-21

**Type of Mix** : WMM ( Wet Mix Macadam)

**Date of test** : 08-02-21

**Oven Dry Weight** : 11000 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Cumulative Weight Retained (gm) | % Cumulative Weight Retained | % Passing | Spec.I.Vide Table 400.13 MORTH Specification |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0.0 | 100.0 | 100 |
| 45 | 320 | 320 | 2.9 | 97.1 | 95-100 |
| 22.4 | 2245 | 2565 | 23.3 | 76.7 | 60-80 |
| 11.2 | 2186 | 4751 | 43.2 | 56.8 | 40-60 |
| 4.75 | 2246 | 6997 | 63.6 | 36.4 | 25-40 |
| 2.36 | 1619 | 8616 | 78.3 | 21.7 | 15-30 |
| 0.6 | 625 | 9241 | 84.0 | 16.0 | 8-22 |
| 0.075 | 1321 | 10562 | 96.0 | 4.0 | 0-5 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.

R KARTHIK RECHAN
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*End of Report*

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# TEST RESULTS OF GRADATION FOR WMM

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 11-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 09-02-21

**Type of Mix** : WMM ( Wet Mix Macadam)

**Date of test** : 09-02-21

**Oven Dry Weight** : 11000 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Cumulative Weight Retained (gm) | % Cumulative Weight Retained | % Passing | Spec.I.Vide Table 400.13 MORTH Specification |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0.0 | 100.0 | 100 |
| 45 | 295 | 295 | 2.7 | 97.3 | 95-100 |
| 22.4 | 2238 | 2533 | 23.0 | 77.0 | 60-80 |
| 11.2 | 2153 | 4686 | 42.6 | 57.4 | 40-60 |
| 4.75 | 2241 | 6927 | 63.0 | 37.0 | 25-40 |
| 2.36 | 1352 | 8279 | 75.3 | 24.7 | 15-30 |
| 0.6 | 602 | 8881 | 80.7 | 19.3 | 8-22 |
| 0.075 | 1315 | 10196 | 92.7 | 7.3 | 0-5 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.

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*End of Report*

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# TEST RESULTS OF GRADATION FOR WMM

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 12-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 10-02-21

**Type of Mix** : WMM ( Wet Mix Macadam)

**Date of test** : 10-02-21

**Oven Dry Weight** : 11000 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Cumulative Weight Retained (gm) | % Cumulative Weight Retained | % Passing | Spec.I.Vide Table 400.13 MORTH Specification |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0.0 | 100.0 | 100 |
| 45 | 269 | 269 | 2.4 | 97.6 | 95-100 |
| 22.4 | 2239 | 2508 | 22.8 | 77.2 | 60-80 |
| 11.2 | 2165 | 4673 | 42.5 | 57.5 | 40-60 |
| 4.75 | 2248 | 6921 | 62.9 | 37.1 | 25-40 |
| 2.36 | 1625 | 8546 | 77.7 | 22.3 | 15-30 |
| 0.6 | 625 | 9171 | 83.4 | 16.6 | 8-22 |
| 0.075 | 1335 | 10506 | 95.5 | 4.5 | 0-5 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.
R KARTHIK RECHAN
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# TEST RESULTS OF GRADATION FOR WMM

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 13-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 11-02-21

**Type of Mix** : WMM ( Wet Mix Macadam)

**Date of test** : 11-02-21

**Oven Dry Weight** : 11000 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Cumulative Weight Retained (gm) | % Cumulative Weight Retained | % Passing | Spec.I.Vide Table 400.13 MORTH Specification |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0.0 | 100.0 | 100 |
| 45 | 293 | 293 | 2.7 | 97.3 | 95-100 |
| 22.4 | 2219 | 2512 | 22.8 | 77.2 | 60-80 |
| 11.2 | 2158 | 4670 | 42.5 | 57.5 | 40-60 |
| 4.75 | 2251 | 6921 | 62.9 | 37.1 | 25-40 |
| 2.36 | 1625 | 8546 | 77.7 | 22.3 | 15-30 |
| 0.6 | 610 | 9156 | 83.2 | 16.8 | 8-22 |
| 0.075 | 1368 | 10524 | 95.7 | 4.3 | 0-5 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.

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*End of Report*

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# TEST RESULTS OF GRADATION FOR WMM

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 15-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 12-02-21

**Type of Mix** : WMM ( Wet Mix Macadam)

**Date of test** : 12-02-21

**Oven Dry Weight** : 11000 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Cumulative Weight Retained (gm) | % Cumulative Weight Retained | % Passing | Spec.I.Vide Table 400.13 MORTH Specification |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0.0 | 100.0 | 100 |
| 45 | 261 | 261 | 2.4 | 97.6 | 95-100 |
| 22.4 | 2241 | 2502 | 22.7 | 77.3 | 60-80 |
| 11.2 | 2175 | 4677 | 42.5 | 57.5 | 40-60 |
| 4.75 | 2237 | 6914 | 62.9 | 37.1 | 25-40 |
| 2.36 | 1621 | 8535 | 77.6 | 22.4 | 15-30 |
| 0.6 | 654 | 9189 | 83.5 | 16.5 | 8-22 |
| 0.075 | 1350 | 10539 | 95.8 | 4.2 | 0-5 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.

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# TEST RESULTS OF GRADATION FOR WMM

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 15-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 13-02-21

**Type of Mix** : WMM ( Wet Mix Macadam)

**Date of test** : 13-02-21

**Oven Dry Weight** : 11000 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Cumulative Weight Retained (gm) | % Cumulative Weight Retained | % Passing | Spec.I.Vide Table 400.13 MORTH Specification |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0.0 | 100.0 | 100 |
| 45 | 312 | 312 | 2.8 | 97.2 | 95-100 |
| 22.4 | 2289 | 2601 | 23.6 | 76.4 | 60-80 |
| 11.2 | 2156 | 4757 | 43.2 | 56.8 | 40-60 |
| 4.75 | 2198 | 6955 | 63.2 | 36.8 | 25-40 |
| 2.36 | 1669 | 8624 | 78.4 | 21.6 | 15-30 |
| 0.6 | 599 | 9223 | 83.8 | 16.2 | 8-22 |
| 0.075 | 1329 | 10552 | 95.9 | 4.1 | 0-5 |

* The results obtained are satisfactory as per standard requirements.

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.
R KARTHIK RECHAN
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# TEST REPORT OF AGGEGRATE IMPACT VALUE
## IS: 2386 Part IV

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 08-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 06-02-21

**Type of Mix** : Coarse Aggregate for WMM ( Wet Mix Macadam)

**Date of test** : 06-02-21

| Sl.No | Particulars of observations | Index | TEST 1 | TEST 2 |
|---|---|---|---|---|
| 1 | Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve) | A | 300.2 | 300.2 |
| 2 | Weight of fraction passing 2.36mm sieve After giving 15 blows | B | 73.9 | 74.0 |
| 3 | weight of fraction retained 2.36mm sieve After giving 15 blows | C | 225.9 | 225.8 |
| 4 | Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made. | A-(B+C) | - 0.4 | 0.4 |
| 5 | Aggregate impact value | (B/A)*100 | 24.6 | 24.7 |
| 6 | Aggregate impact value ( Mean of two tests) | Pecentage | 24.6 | |

* The results obtained are satisfactory as per standard requirements.

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*End of Report*

# TEST REPORT OF AGGEGRATE IMPACT VALUE
## IS: 2386 Part IV

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 10-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 08-02-21

**Type of Mix** : Coarse Aggregate for WMM ( Wet Mix Macadam)

**Date of test** : 08-02-21

| Sl.No | Particulars of observations | Index | TEST 1 | TEST 2 |
|---|---|---|---|---|
| 1 | Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve) | A | 300.2 | 300.2 |
| 2 | Weight of fraction passing 2.36mm sieve After giving 15 blows | B | 73.9 | 74.0 |
| 3 | weight of fraction retained 2.36mm sieve After giving 15 blows | C | 225.3 | 225.8 |
| 4 | Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made. | A-(B+C) | 1.0 | 0.4 |
| 5 | Aggregate impact value | (B/A)*100 | 24.6 | 24.7 |
| 6 | Aggregate impact value ( Mean of two tests) | Pecentage | 24.6 | |

* The results obtained are satisfactory as per standard requirements.

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# DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007 )

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 08-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 06-02-21

**Type of Mix** : Coarse Aggregate for WMM ( Wet Mix Macadam)

**Date of test** : 06-02-21

**Result:**

| Index | Percentage of Flakiness and Elongation Index | Secified limits as per MORTH specification table 400-12 |
|---|---|---|
| Flakiness Index | 11.9% | Combined Flakiness & Elongation Index for WMM is Maximum 35% |
| Elongation Index | 15.5% | |
| Combined Flakiness and Elongation Index for WMM | 27.4% | |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.

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# DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007 )

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 10-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 08-02-21

**Type of Mix** : Coarse Aggregate for WMM ( Wet Mix Macadam)

**Date of test** : 08-02-21

**Result:**

| Index | Percentage of Flakiness and Elongation Index | Secified limits as per MORTH specification table 400-12 |
|---|---|---|
| Flakiness Index | 9.9% | Combined Flakiness & Elongation Index for WMM is Maximum 35% |
| Elongation Index | 17.5% | |
| Combined Flakiness and Elongation Index for WMM | 27.4% | |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

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*End of Report*

# DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007 )

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 11-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 09-02-21

**Type of Mix** : Coarse Aggregate for WMM ( Wet Mix Macadam)

**Date of test** : 09-02-21

**Result:**

| Index | Percentage of Flakiness and Elongation Index | Secified limits as per MORTH specification table 400-12 |
|---|---|---|
| Flakiness Index | 8.5% | Combined Flakiness & Elongation Index for WMM is Maximum 35% |
| Elongation Index | 13.5% | |
| Combined Flakiness and Elongation Index for WMM | 22.0% | |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

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Format No: CP/TF/01

# TEST REPORT ON BITUMEN

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 17-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer's Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 15-02-21

**Sample Type** : Bitumen

**Reference to BIS codes** : IS: 1201-1220(1978) (Reaffirmed-2004)

**Date of test** : 15-02-21

## Test Results

| Sl.no | Name of Test | Result | Requirements as per IS:73-2013 |
|---|---|---|---|
| 1 | Penetration at 25°C , in 1/10th mm | 64 | 60 to 70 |
| 2 | Softening Point, °C | 51.2 | Min. 40°C |
| 3 | Ductility, cm | 98 | Min. 75cm |
| 4 | Flash point, °C | 245 | Min. 220°C |
| | Fire point, °C | 272 | |

* The results obtained are satisfactory as per standard requirements.

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# TEST RESULTS OF GRADATION FOR BM
## (IS 2386:(Part 1) 1963 (RA2011)

**Lab ID** : CP-RW-2021-07-06-05 **Date: 22-02-21**

**Project Name** :

Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 20-02-21

**Type of Mix** : BM-Plant (Bituminous Macadam)

**Date of test** 20-02-21

**Weight of Sample(gm)** : 5000

| IS Sieve Size(mm) | Weight Retained(gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Specification Limits as per MORTH specification Table 500-7(grading -2) |
|---|---|---|---|---|---|
| 26.5 | 0 | 0 | 0 | 100 | 100 |
| 19 | 165 | 165 | 3.3 | 96.7 | 90-100 |
| 13.2 | 512 | 677 | 13.5 | 86.5 | 56-88 |
| 4.75 | 2759 | 3436 | 68.7 | 31.3 | 16-36 |
| 2.36 | 911 | 4347 | 86.9 | 13.1 | 4-19 |
| 0.3 | 358 | 4705 | 94.1 | 5.9 | 2-10 |
| 0.075 | 232 | 4937 | 98.7 | 1.3 | 0-8 |
| PAN | 63 | 5000 | 100.0 | 0.0 | 0 |

* The results obtained are satisfactory as per standard requirements.

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS MACADAM

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 23-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 20-02-21

**Type of Mix** : BM (Bituminous Macadam)

**Date of test** : 20-02-21

**Table 500-6 : Physical Requirements fo Coarse Aggregate for Bituminous Macadam**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 13.8 | Combined Flakiness & Elongation Index for BM is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 7.2 | | |
| Strength | Aggregate Impact Value | 25.2 | Maximum 30% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.51 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.17 | Maximum 2% | IS:2386 Part III |

* The results obtained are satisfactory as per standard requirements.

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# TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 23-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 20-02-21

**Type of Mix** : BM(Bitumnous Macadam)

**Date of test** : 20-02-21

**Type of Binder** : 60/70

**% of Binder Used** : 5.0%

**Weight of Aggregate** : 200.0 gm

**Weight of Binder** : 10.0 gm

**Temperature of water bath** : 40°C

| No of test | Retained Stripping Percentage | Stripping Percentage | Average Retained Stripping Percentage | Secified limits as per MORTH specification table 500-8 |
|---|---|---|---|---|
| 1 | 98.0 | 2.0 | 98.2 | Minimum Retained Coating 95% |
| 2 | 98.5 | 1.5 | | |
| 3 | 98.0 | 2.0 | | |

* The results obtained are satisfactory as per standard requirements.

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# TESTS RESULTS ON STABILITY OF MIX

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 23-02-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 20-02-21

**Type of Mix** : BM (Bituminous Mecadam)

**Date of test** : 20-02-21

**The results of the tests conducted on the Bituminous Macadam mix sample are as follow**

| Sl.No | Particulars of observations | TEST 1 | TEST 2 | Secified limits as per MORTH specification table 500-11 |
|---|---|---|---|---|
| 1 | Marshal Stability at 60°C, KN | 11.29 | 11.82 | 9KN(Min) |
| 2 | Marshal flow at 60°C, mm | 3.54 | 3.87 | 2-4 |
| 3 | Percent air Voids | 4.56 | 4.17 | 3-5 |
| 4 | Percent Voids in mineral Aggregate(VMA %) | 14.54 | 14.76 | 13-15 |
| 5 | Percent Voids filled with Bitumen(VFB %) | 68.98 | 70.28 | 65-75 |
| 6 | Density, g/cc | 2.42 | 2.40 | – |

* The results obtained are satisfactory as per standard requirements.

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# TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BM (IS 2386:(Part 1) 1963 (RA2011)

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 04-03-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 03-03-21

**Type of Mix** : BM (Bituminous Macadam)

**Date of test** : 03-03-21

| Sl.no | Description | Index | Trail 1 | Trail 2 |
|---|---|---|---|---|
| 1 | Weight of the Sample | A | 500 | 500 |
| 2 | Weight of the sample After extraction | B | 470 | 465 |
| 3 | Bitumen percentage | $\frac{A-B}{A} \times 100$ | 6 | 7.00 |
| 4 | Average percentage | % | 6.50 | |

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**Lab ID** : **CP-RW-2021-07-06-05** **Date: 04-03-21**

**AFTER EXTRACTION(Trail-1)**

**Weight of Sample** : 470 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Specification Limits as per MORTH specification Table 500-7(grading -2) |
|---|---|---|---|---|---|
| 26.5 | 0 | 0 | 0.0 | 100.0 | 100 |
| 19 | 38 | 38 | 8.1 | 91.9 | 90-100 |
| 13.2 | 147 | 185 | 39.4 | 60.6 | 56-88 |
| 4.75 | 191 | 376 | 80.0 | 20.0 | 16-36 |
| 2.36 | 28 | 404 | 86.0 | 14.0 | 4-19 |
| 0.3 | 32 | 436 | 92.8 | 7.2 | 2-10 |
| 0.075 | 31 | 467 | 99.4 | 0.6 | 0-8 |

**AFTER EXTRACTION(Trail-2)**

**Weight of Sample** : 465 Grams

| IS Sieve Size(mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Specification Limits as per MORTH specification Table 500-7(grading -2) |
|---|---|---|---|---|---|
| 26.5 | 0 | 0 | 0.0 | 100.0 | 100 |
| 19 | 38 | 38 | 8.2 | 91.8 | 90-100 |
| 13.2 | 147 | 185 | 39.8 | 60.2 | 56-88 |
| 4.75 | 191 | 376 | 80.9 | 19.1 | 16-36 |
| 2.36 | 28 | 404 | 86.9 | 13.1 | 4-19 |
| 0.3 | 28 | 432 | 92.9 | 7.1 | 2-10 |
| 0.075 | 30 | 462 | 99.4 | 0.6 | 0-8 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

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# TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 01-03-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 26-02-21

**Type of Mix** : BC-Plant (Bituminous Concrete)

**Date of test** : 26-02-21

**Oven Dry Weight** : 5000 Grams

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 89 | 89 | 1.8 | 98.2 | 90-100 |
| 9.5 | 702 | 791 | 15.8 | 84.2 | 70-88 |
| 4.75 | 895 | 1686 | 33.7 | 66.3 | 53-71 |
| 2.36 | 587 | 2273 | 45.5 | 54.5 | 42-58 |
| 1.18 | 492 | 2765 | 55.3 | 44.7 | 34-48 |
| 0.6 | 503 | 3268 | 65.4 | 34.6 | 26-38 |
| 0.3 | 528 | 3796 | 75.9 | 24.1 | 18-28 |
| 0.15 | 458 | 4254 | 85.1 | 14.9 | 12-20 |
| 0.075 | 350 | 4604 | 92.1 | 7.9 | 4-10 |
| PAN | 396 | 5000 | 100 | 0.0 | 0 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

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# TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 01-03-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 27-02-21

**Type of Mix** : BC-Plant (Bituminous Concrete)

**Date of test** : 27-02-21

**Oven Dry Weight** : 5000 Grams

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 68 | 68 | 1.4 | 98.6 | 90-100 |
| 9.5 | 695 | 763 | 15.3 | 84.7 | 70-88 |
| 4.75 | 879 | 1642 | 32.8 | 67.2 | 53-71 |
| 2.36 | 593 | 2235 | 44.7 | 55.3 | 42-58 |
| 1.18 | 489 | 2724 | 54.5 | 45.5 | 34-48 |
| 0.6 | 520 | 3244 | 64.9 | 35.1 | 26-38 |
| 0.3 | 536 | 3780 | 75.6 | 24.4 | 18-28 |
| 0.15 | 463 | 4243 | 84.9 | 15.1 | 12-20 |
| 0.075 | 357 | 4600 | 92.0 | 8.0 | 4-10 |
| PAN | 400 | 5000 | 100 | 0.0 | 0 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.
R KARTHIK RECHAN
Authorized Signatory
Quality Manager

Assistant Executive Engineer
Vidyaranyapura Sub Division
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*End of Report*

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# TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 03-03-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 01-03-21

**Type of Mix** : BC-Plant (Bituminous Concrete)

**Date of test** : 01-03-21

**Oven Dry Weight** : 5000 Grams

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 95 | 95 | 1.9 | 98.1 | 90-100 |
| 9.5 | 702 | 797 | 15.9 | 84.1 | 70-88 |
| 4.75 | 891 | 1688 | 33.8 | 66.2 | 53-71 |
| 2.36 | 563 | 2251 | 45.0 | 55.0 | 42-58 |
| 1.18 | 499 | 2750 | 55.0 | 45.0 | 34-48 |
| 0.6 | 498 | 3248 | 65.0 | 35.0 | 26-38 |
| 0.3 | 535 | 3783 | 75.7 | 24.3 | 18-28 |
| 0.15 | 468 | 4251 | 85.0 | 15.0 | 12-20 |
| 0.075 | 349 | 4600 | 92.0 | 8.0 | 4-10 |
| PAN | 400 | 5000 | 100 | 0.0 | 0 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

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# TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 01-03-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 26-02-21

**Type of Mix** : BC(Bitumenous Concrete)

**Date of test** : 26-02-21

**Type of Binder** : 60/70

**% of Binder Used** : 5.0%

**Weight of Aggregate** : 200.0 gm

**Weight of Binder** : 10.0 gm

**Temperature of water bath** : 40°C

| No of test | Retained Stripping Percentage | Stripping Percentage | Average Retained Stripping Percentage | Secified limits as per MORTH specification table 500-8 |
|---|---|---|---|---|
| 1 | 98.5 | 1.5 | 98.3 | Minimum Retained Coating 95% |
| 2 | 98.5 | 1.5 | | |
| 3 | 98.0 | 2.0 | | |

* The results obtained are satisfactory as per standard requirements.

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 01-03-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 26-02-21

**Type of Mix** : BC (Bituminous Concrete)

**Date of test** : 26-02-21

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 12.4 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 11.8 | | |
| Strength | Aggregate Impact Value | 22.1 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.68 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.21 | Maximum 2% | IS:2386 Part III |

* The results obtained are satisfactory as per standard requirements.

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 02-03-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 27-02-21

**Type of Mix** : BC (Bituminous Concrete)

**Date of test** : 27-02-21

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 11.4 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 10.7 | | |
| Strength | Aggregate Impact Value | 23.1 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.56 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.23 | Maximum 2% | IS:2386 Part III |

* The results obtained are satisfactory as per standard requirements.

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BBMP, Bangalore - 97


*End of Report*

# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 04-03-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 01-03-21

**Type of Mix** : BC (Bituminous Concrete)

**Date of test** : 01-03-21

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 9.9 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 10.3 | | |
| Strength | Aggregate Impact Value | 22.1 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.65 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.2 | Maximum 2% | IS:2386 Part III |

* The results obtained are satisfactory as per standard requirements.

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# TESTS RESULTS ON STABILITY OF MIX

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 01-03-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 26-02-21

**Type of Mix** : BC (Bituminous Concrete)

**Date of test** : 26-02-21

**The results of the tests conducted on the Bituminous Concrete mix sample are as follow**

| Sl.No | Particulars of observations | TEST 1 | TEST 2 | Secified limits as per MORTH specification table 500-11 |
|---|---|---|---|---|
| 1 | Marshal Stability at 60°C, KN | 11.14 | 11.13 | 10KN(min) |
| 2 | Marshal flow at 60°C, mm | 3.52 | 3.51 | 2-4 |
| 3 | Percent air Voids | 4.82 | 4.83 | 3-5 |
| 4 | Percent Voids in mineral Aggregate(VMA %) | 14.28 | 14.26 | 13-15 |
| 5 | Percent Voids filled with Bitumen(VFB %) | 71.87 | 71.63 | 65-75 |
| 6 | Density, g/cc | 2.25 | 2.26 | – |

* The results obtained are satisfactory as per standard requirements.

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

CIVIL Pro Sig..... Date..... BANGALORE

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*End of Report*

## TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2011 )

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 05-03-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 04-03-21

**Type of Mix** : BC (Bituminous Concrete)

**Date of test** : 04-03-21

| Sl.no | Description | Index | Trail 1 | Trail 2 |
|---|---|---|---|---|
| 1 | Weight of the Sample | A | 500 | 500 |
| 2 | Weight of the sample After extraction | B | 469 | 470 |
| 3 | Bitumen percentage | $\frac{A-B}{A} \times 100$ | 6.20 | 6.00 |
| 4 | Average percentage | % | 6.1 | |

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CIVIL Pro Sig..... Date..... BANGALORE

**R KARTHIK RECHAN**
**Authorized Signatory**
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BBMP, Bangalore - 97

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 05-03-21**

**AFTER EXTRACTION - Trail-1**

**Total Weight of the Sample(gm)** : 469

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-23(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 4 | 4 | 0.9 | 99.1 | 90-100 |
| 9.5 | 62 | 66 | 14.1 | 85.9 | 70-88 |
| 4.75 | 112 | 178 | 38.0 | 62.0 | 53-71 |
| 2.36 | 88 | 266 | 56.7 | 43.3 | 42-58 |
| 1.18 | 29 | 295 | 62.9 | 37.1 | 34-48 |
| 0.6 | 11 | 306 | 65.2 | 34.8 | 26-38 |
| 0.3 | 46 | 352 | 75.1 | 24.9 | 18-28 |
| 0.15 | 45 | 397 | 84.6 | 15.4 | 12-20 |
| 0.075 | 55 | 452 | 96.4 | 3.6 | 4-10 |

**AFTER EXTRACTION - Trail-2**

**Total Weight of the Sample(gm)** : 470

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-23(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 4 | 4 | 0.9 | 99.1 | 90-100 |
| 9.5 | 62 | 66 | 14.0 | 86.0 | 70-88 |
| 4.75 | 112 | 178 | 37.9 | 62.1 | 53-71 |
| 2.36 | 88 | 266 | 56.6 | 43.4 | 42-58 |
| 1.18 | 29 | 295 | 62.8 | 37.2 | 34-48 |
| 0.6 | 11 | 306 | 65.1 | 34.9 | 26-38 |
| 0.3 | 46 | 352 | 74.9 | 25.1 | 18-28 |
| 0.15 | 45 | 397 | 84.5 | 15.5 | 12-20 |
| 0.075 | 55 | 452 | 96.2 | 3.8 | 4-10 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

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## TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2011 )

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 20-04-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 19-04-21

**Type of Mix** : BC (Bituminous Concrete)

**Date of test** : 19-04-21

| Sl.no | Description | Index | Trail 1 | Trail 2 |
|---|---|---|---|---|
| 1 | Weight of the Sample | A | 500 | 500 |
| 2 | Weight of the sample After extraction | B | 471 | 469 |
| 3 | Bitumen percentage | $\frac{A-B}{A} \times 100$ | 5.80 | 6.20 |
| 4 | Average percentage | % | 6.0 | |

CIVIL Pro Sig..... Date..... BANGALORE

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**Lab ID** : **CP-RW-2021-07-06-05** **Date: 20-04-21**

**AFTER EXTRACTION - Trail-1**

**Total Weight of the Sample(gm)** : 471

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-23(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 10 | 10 | 2.1 | 97.9 | 90-100 |
| 9.5 | 59 | 69 | 14.6 | 85.4 | 70-88 |
| 4.75 | 125 | 194 | 41.2 | 58.8 | 53-71 |
| 2.36 | 65 | 259 | 55.0 | 45.0 | 42-58 |
| 1.18 | 30 | 289 | 61.4 | 38.6 | 34-48 |
| 0.6 | 20 | 309 | 65.6 | 34.4 | 26-38 |
| 0.3 | 56 | 365 | 77.5 | 22.5 | 18-28 |
| 0.15 | 38 | 403 | 85.6 | 14.4 | 12-20 |
| 0.075 | 25 | 428 | 90.9 | 9.1 | 4-10 |

**AFTER EXTRACTION - Trail-2**

**Total Weight of the Sample(gm)** : 469

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-23(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 8 | 8 | 1.7 | 98.3 | 90-100 |
| 9.5 | 68 | 76 | 16.2 | 83.8 | 70-88 |
| 4.75 | 115 | 191 | 40.7 | 59.3 | 53-71 |
| 2.36 | 75 | 266 | 56.7 | 43.3 | 42-58 |
| 1.18 | 29 | 295 | 62.9 | 37.1 | 34-48 |
| 0.6 | 15 | 310 | 66.1 | 33.9 | 26-38 |
| 0.3 | 48 | 358 | 76.3 | 23.7 | 18-28 |
| 0.15 | 49 | 407 | 86.8 | 13.2 | 12-20 |
| 0.075 | 36 | 443 | 94.5 | 5.5 | 4-10 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | ENVIRONMENTAL
WATER TESTING | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES

## TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2011 )

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 25-05-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 24-05-21

**Type of Mix** : BC (Bituminous Concrete)

**Date of test** : 24-05-21

| Sl.no | Description | Index | Trail 1 | Trail 2 |
|---|---|---|---|---|
| 1 | Weight of the Sample | A | 500 | 500 |
| 2 | Weight of the sample After extraction | B | 468 | 469 |
| 3 | Bitumen percentage | $\frac{A-B}{A} \times 100$ | 6.40 | 6.20 |
| 4 | Average percentage | % | 6.3 | |

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**Lab ID** : **CP-RW-2021-07-06-05** **Date: 25-05-21**

**AFTER EXTRACTION - Trail-1**

**Total Weight of the Sample(gm)** : 468

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-23(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 15 | 15 | 3.2 | 96.8 | 90-100 |
| 9.5 | 85 | 100 | 21.4 | 78.6 | 70-88 |
| 4.75 | 95 | 195 | 41.7 | 58.3 | 53-71 |
| 2.36 | 58 | 253 | 54.1 | 45.9 | 42-58 |
| 1.18 | 36 | 289 | 61.8 | 38.2 | 34-48 |
| 0.6 | 8 | 297 | 63.5 | 36.5 | 26-38 |
| 0.3 | 53 | 350 | 74.8 | 25.2 | 18-28 |
| 0.15 | 48 | 398 | 85.0 | 15.0 | 12-20 |
| 0.075 | 45 | 443 | 94.7 | 5.3 | 4-10 |

**AFTER EXTRACTION - Trail-2**

**Total Weight of the Sample(gm)** : 469

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-23(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 3 | 3 | 0.6 | 99.4 | 90-100 |
| 9.5 | 56 | 59 | 12.6 | 87.4 | 70-88 |
| 4.75 | 121 | 180 | 38.4 | 61.6 | 53-71 |
| 2.36 | 73 | 253 | 53.9 | 46.1 | 42-58 |
| 1.18 | 39 | 292 | 62.3 | 37.7 | 34-48 |
| 0.6 | 12 | 304 | 64.8 | 35.2 | 26-38 |
| 0.3 | 48 | 352 | 75.1 | 24.9 | 18-28 |
| 0.15 | 40 | 392 | 83.6 | 16.4 | 12-20 |
| 0.075 | 51 | 443 | 94.5 | 5.5 | 4-10 |

* The results obtained are satisfactory as per standard requirements.

CIVIL Pro Sig..... Date..... BANGALORE

FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signatory
Quality Manager


*End of Report*

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

## TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2011 )

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 12-06-21**

**Project Name** : Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 11-06-21

**Type of Mix** : BC (Bituminous Concrete)

**Date of test** : 11-06-21

| Sl.no | Description | Index | Trail 1 | Trail 2 |
|---|---|---|---|---|
| 1 | Weight of the Sample | A | 500 | 500 |
| 2 | Weight of the sample After extraction | B | 470 | 468 |
| 3 | Bitumen percentage | $\frac{A-B}{A} \times 100$ | 6.00 | 6.40 |
| 4 | Average percentage | % | 6.2 | |

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Quality Manager



Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 12-06-21**

**AFTER EXTRACTION - Trail-1**

**Total Weight of the Sample(gm)** : 470

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-23(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 16 | 16 | 3.4 | 96.6 | 90-100 |
| 9.5 | 59 | 75 | 16.0 | 84.0 | 70-88 |
| 4.75 | 135 | 210 | 44.7 | 55.3 | 53-71 |
| 2.36 | 59 | 269 | 57.2 | 42.8 | 42-58 |
| 1.18 | 25 | 294 | 62.6 | 37.4 | 34-48 |
| 0.6 | 9 | 303 | 64.5 | 35.5 | 26-38 |
| 0.3 | 59 | 362 | 77.0 | 23.0 | 18-28 |
| 0.15 | 33 | 395 | 84.0 | 16.0 | 12-20 |
| 0.075 | 49 | 444 | 94.5 | 5.5 | 4-10 |

**AFTER EXTRACTION - Trail-2**

**Total Weight of the Sample(gm)** : 468

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-23(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.0 | 100.0 | 100 |
| 13.2 | 6 | 6 | 1.3 | 98.7 | 90-100 |
| 9.5 | 70 | 76 | 16.2 | 83.8 | 70-88 |
| 4.75 | 102 | 178 | 38.0 | 62.0 | 53-71 |
| 2.36 | 83 | 261 | 55.8 | 44.2 | 42-58 |
| 1.18 | 39 | 300 | 64.1 | 35.9 | 34-48 |
| 0.6 | 12 | 312 | 66.7 | 33.3 | 26-38 |
| 0.3 | 48 | 360 | 76.9 | 23.1 | 18-28 |
| 0.15 | 39 | 399 | 85.3 | 14.7 | 12-20 |
| 0.075 | 39 | 438 | 93.6 | 6.4 | 4-10 |

* The results obtained are satisfactory as per standard requirements.

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**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
**Authorized Signatory**
**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97


*End of Report*

## DETERMINATION OF RATE OF SPREAD TACK COAT

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 05-03-21**

**Project Name** :

Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 04-03-21

**Type of Mix** : Tack coat

**Date of test** : 04-03-21

| Sl.No | Determination | Unit | TEST 1 | TEST 2 |
|---|---|---|---|---|
| 1 | Size of Plate (mxm) | Mt | 0.30 x .30 | 0.30 x .30 |
| 2 | Area of Plate (a) | Sq.mtr | 0.09 | 0.09 |
| 3 | Initial Wt of empty Plate (b) | Kg | 0.78 | 0.748 |
| 4 | Final weight of plate after application of tack Coat ( c) | Kg | 0.803 | 0.771 |
| 5 | Weight of tack Coat (d=c-b) | Kg | 0.023 | 0.023 |
| 6 | Rate of spread of tack coat | Kg/sq.m | 0.256 | 0.256 |
| 7 | Average | Kg/sq.m | 0.256 | |
| 8 | Specified Limit | Kg/sq.m | 0.250 Kg/sq.m | |

* The results obtained are satisfactory as per standard requirements.

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FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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*End of Report*

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore -97

## DETERMINATION OF RATE OF SPREAD TACK COAT

**Lab ID** : **CP-RW-2021-07-06-05** **Date: 12-06-21**

**Project Name** :

Package No.09(Includes 2 Works of Rs.200.00 Lakhs) : 1) Improvements to Roads and Drains at Singapura, Singapura Garden, Valmiki Nagara, Ashreya Layout, Kuvempunagara & Naidu Layout in Ward no.11 Kuvempunagara. 2) Improvements to Roads and Drains at Teachers Layout, Raghavendra Colony and Balaji Layout, Srinidhi Layout, Vaishnavi Layout, Sai Garden, M S Palya, Bharath Nagara, Chinnaswamy Layout, Maruthi Layout, Vinayaka Nagar, Singapura Paradise in Ward no.11 Kuvempunagara.

**Agency** : Sri.Vasanthkumar K.N, No.57K, 13th Cross, 1st Block, Rajajinagara, Bangalore-560 010.

**Customer Reference** : BBMP/EE/BTP/WO/162/2018-19

**Date of Receipt** : 11-06-21

**Type of Mix** : Tack coat

**Date of test** : 11-06-21

| Sl.No | Determination | Unit | TEST 1 | TEST 2 |
|---|---|---|---|---|
| 1 | Size of Plate (mxm) | Mt | 0.30 x .30 | 0.30 x .30 |
| 2 | Area of Plate (a) | Sq.mtr | 0.09 | 0.09 |
| 3 | Initial Wt of empty Plate (b) | Kg | 0.78 | 0.748 |
| 4 | Final weight of plate after application of tack Coat ( c) | Kg | 0.803 | 0.771 |
| 5 | Weight of tack Coat (d=c-b) | Kg | 0.023 | 0.023 |
| 6 | Rate of spread of tack coat | Kg/sq.m | 0.256 | 0.256 |
| 7 | Average | Kg/sq.m | 0.256 | |
| 8 | Specified Limit | Kg/sq.m | 0.250 Kg/sq.m | |

* The results obtained are satisfactory as per standard requirements.

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